

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No. : 08/793,416  
Applicant : John Thomas Hare  
Filed : 10/23/1997  
Group Art Unit: 3663  
Examiner : Palabrica, Ricardo J.  
Docket No. : ITW-12287  
Customer No. : 021884  
Title : MOULDED RADIATION SHIELD

**APPEAL BRIEF**

Mail Stop Appeal Brief - Patents  
Commissioner of Patents and Trademarks  
PO Box 1450  
Alexandria, VA 22313-1450

Sir:

**REAL PARTY IN INTEREST**

Illinois Tool Works, Inc. is the real party in interest in the above referenced patent application.

### **RELATED APPEALS AND INTERFERENCES**

Neither Appellant's representative, Appellant nor Appellant's assignee are aware of any related appeals and/or interferences affected by or having a bearing on the Board's decision in the pending appeal.

### **STATUS OF CLAIMS**

Claims 20-26 and 30-38 are currently pending. Claims 1-19 and 27-29 have been canceled. Claims 30-38 have been withdrawn based upon a prior election requirement. As such, Appellant appeals the Final Rejection of claims 20-26.

### **STATUS OF AMENDMENTS**

No amendments have been filed subsequent to the Final Rejection. As to the amendments filed prior to the Final Rejection, all amendments appear to have been entered and considered.

## **SUMMARY OF THE CLAIMED SUBJECT MATTER**

Claim 20 is the only independent claim involved in the present Appeal.

In independent claim 20, Appellant has claimed a moulded radiation shield for a source of gamma rays. The moulded shield includes a resilient, cylindrical shield body 2 having a cavity shaped and dimensioned to receive the source. The shield body 2 is in the form of a cylindrical annulus including an inner face, an outer face and a longitudinal slit 4. The shield body 2 may be selectively opened along the slit 4 so that the shield body 2 can be pushed over a pipe so as to permit the passage of the source into the cavity and subsequently close. The slit 4 extends from the inner face to the outer face at an oblique angle relative to the radius of the shield body 2 and the slit 4 is unsealed along its length to permit opening and closing thereof facilitating the passage of the source into the cavity. Page 6, line 18, to Page 7, line 5, of the Specification as originally filed. The shield body 2 further includes a core layer 30 of cured liquid silicone resin loaded with particulate gamma radiation-shielding material adapted to surround a radiation source located in the cavity. The core layer 30 is located between two outer layers 40 of solid polymeric material. Page 8, lines 8-17, of the Specification as originally filed.

The dependent claims are not argued separately and are, therefore, not addressed in the summary.

### **GROUND OF REJECTION TO BE REVIEWED ON APPEAL**

1. Whether claims 20-26 are unpatentable under 35 U.S.C. § 103(a) as being obvious based upon Great Britain Patent No. 945,594 to Weinberger (“Weinberger”) in view of either U.S. Patent No. 4,576,846 to Noel (“Noel”) or U.S. Patent No. 4,748,060 to Fry et al. (“Fry”).

## ARGUMENTS

### **I. CLAIMS 20-26 ARE NOT UNPATENTABLE UNDER 35 U.S.C. § 103 BASED UPON WEINBERGER IN VIEW OF EITHER NOEL OR FRY**

Claims 20-26 stand rejected under 35 U.S.C. § 103 as being obvious based upon the disclosures of Weinberger in view of either Noel or Fry.

In particular, independent claim 20 sets forth and defines a moulded shield for a source of gamma-rays. The moulded shield includes a resilient, cylindrical shield body having a cavity shaped and dimensioned to receive the source. The shield body is in the form of a cylindrical annulus including an inner face, an outer face and a longitudinal slit. The shield body may be selectively opened along the slit so that the shield body can be pushed over a pipe so as to permit the passage of the source into the cavity and subsequently close. The slit extends from the inner face to the outer face at an oblique angle relative to the radius of the shield body and the slit is unsealed along its length to permit opening and closing thereof facilitating the passage of the source into the cavity. The shield body further includes a core layer of cured liquid silicone resin loaded with particulate gamma radiation shielding material adapted to surround a radiation source located in the cavity. The core layer is located between two outer layers of solid polymeric material.

In presenting a rejection based upon Weinberger in view of either Noel or Fry, the Examiner generally contends that Weinberger discloses the basic material of the claimed invention but fails to disclose the claimed shape. The Office Action then applies Noel or Fry is teaching the purported obviousness of modifying Weinberger so as to read upon the pending claims. This combination of references overlooks the importance of the combination of the shape and material in achieving the ultimate functionality of the claimed invention in the preventing the passage of gamma-rays from a

source to the external environment. In particular, Weinberger, Noel and Fry fails to appreciate the combination of the claimed material and shape ultimately disclosed and claimed in accordance with the present invention.

In establishing the law governing obviousness-type rejections, the Supreme Court in *Graham v. John Deere*, 383 U.S. 1, 148 USPQ 459 (1966), stated:

Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or nonobviousness, these inquiries may have relevancy... This is not to say, however, that there will not be difficulties in applying the nonobviousness test. What is obvious is not a question upon which there is likely to be uniformity of thought in every given factual context. The difficulties, however, are comparable to those encountered daily by the courts in such frames of reference as negligence and scienter, and should be amenable to a case-by-case development. We believe that strict observance of the requirements laid down here will result in that uniformity and definitiveness which Congress called for in the 1952 Act.

With the foregoing in mind, the U.S. Patent & Trademark Office has determined that a *prima facie* case of obviousness is established by meeting three basic criteria. First, the Examiner must show some suggestion or motivation to modify the reference or to combine reference teachings. Second, the Examiner must show a reasonable expectation of success in modifying the primary reference based upon the teachings of the prior art. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Support for the proposed modification and the reasonable expectation of success must be found in the prior art. MPEP 706.02(j).



Considering these requirements, the Examiner has failed to set forth a *prima facie* case of obviousness. First, the motivation suggested by the Examiner, that is, creating a legging out of the material disclosed by Weinberger would not lead to the claimed invention. The Examiner suggests that because Weinberger suggests use of the disclosed material in the manufacture of “leggings” it would be obvious to use a “lockage arrangement” as discussed “in either Fig. 19 or Fig. 20 of Noel . . . for Weinberger’s legging shield because of a configuration that facilitates sturdy, locking contact, as well as a serpentine shape for the locking ends that would enhance the shielding property of the shield.” This motivation is tenuous at best when considering both the disclosures of Weinberger and Noel.

While Weinberger is explicitly concerned with protecting human beings from harmful radioactive substances, X-rays and the like, Noel provides a structure which is intended for insulating a conduit, such as as pipe, duct or the like. To suggest that one looking to modifying a human body protecting shield would look to insulators for conduits is a reach. For example, while conduits are commonly well defined, rigid structures, the human body is constantly changing and moving with highly diverse body parts. As such, any suggestion that one would be motivated to contemplate the modification of a shield material as disclosed by Weinberger with an annular, lockable structure as disclosed by Noel is without support.

Similarly, Fry is concerned with a pipe covering that provides no motivation for the modification of Weinberger as suggested by the Examiner. Further yet, Fry does not disclose a “slit extending from the inner face to the outer face at an oblique angle relative to the radius of the shield

body and the slit is unsealed along its length to permit opening and closing thereof facilitating the passage of the source into the cavity” as required by the present claim 20.

Ultimately, there is nothing in Weinberger which would suggest that it may be formed into a resilient, cylindrical shield body in the form of a cylindrical annulus with a slit as claimed in accordance with the present invention. Without further proof to the contrary, it is Appellant’s opinion there is no motivation to take the shield disclosed by Weinberger and form it into either the shape disclosed by Fry or the shape disclosed by Noel as such modification would require substantial ingenuity not contemplated in accordance with the cited references.

In addition, a *prima facie* case of obviousness requires a showing of a reasonable expectation of success in modifying the Weinberger reference based upon the teachings of Noel or Fry. As discussed above, Noel and Fry are concerned with insulating conduits and pipes. Neither reference discloses such structure could or would be applied to the manufacture of a “legging” as desired by Weinberger. Appellant is at a loss as to how one would apply the teachings of manufacturing insulating structures for conduits and pipes to the manufacture of a legging for a human being to wear when being confronted with harmful rays. Ultimately, it appears the Examiner has found bits and pieces of the claimed invention and used the teachings of the present application (based upon impermissible hindsight) in arriving at a conclusion of obviousness.

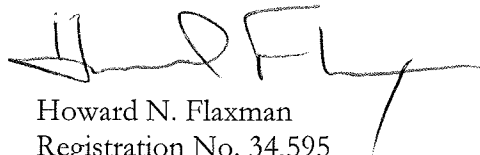
With the foregoing in mind, it is Appellant’s opinion the combination of Weinberger, Noel and/or Fry as suggested by the Examiner is improper and Appellant respectfully requests the outstanding rejection of claim 20 be reversed.

As to those claims dependent upon independent claim 20, it is Appellant's opinion these claims are also allowable over the references of record for at least the reasons discussed above with regard to independent claim 20. As such, Appellant respectfully requests the rejection of these claims also be reversed.

## II. CONCLUSION

In conclusion, Appellant has now shown that the references cited by the Examiner neither disclose nor suggest the claimed invention. Therefore, it is respectfully requested that the outstanding rejection of claims 20-26 be reversed.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'H. N. Flaxman', with a long horizontal stroke extending to the right.

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## CLAIMS APPENDIX

1-19 (canceled)

20. (currently amended) A moulded shield for a source of  $\gamma$ -rays, comprising:

a resilient, cylindrical shield body having a cavity shaped and dimensioned to receive the source, the shield body being in the form of a cylindrical annulus including an inner face, an outer face and a longitudinal slit, wherein the shield body may be selectively opened along the slit so that the shield body can be pushed over a pipe so as to permit the passage of the source into the cavity and subsequently closed, the slit extending from the inner face to the outer face at an oblique angle relative to the radius of the shield body and the slit is unsealed along its length to permit opening and closing thereof facilitating the passage of the source into the cavity;

the shield body further including a core layer of cured liquid silicone resin loaded with particulate  $\gamma$  radiation-shielding material adapted to surround a radiation source located in the cavity, the core layer being located between two outer layers of solid polymeric material.

21. (original) The shield according to claim 20, wherein the particulate radiation shielding material comprises lead particles.

22. (original) The shield according to claim 20, wherein the core is encapsulated in the solid polymeric material.

23. (original) The shield according to claim 20, wherein the solid polymeric material comprises cured liquid resin.

24. (original) The shield according to claim 23, wherein the solid polymeric material comprises silicone.

25. (original) The shield according to claim 20, wherein the outer layers are each 0.5 to 3mm thick.

26. (original) The shield according to claim 20, wherein the core layer is 5 to 50mm thick.

27-29 (canceled)

30. (withdrawn) The shield according to claim 28, wherein the slit is in the form of a double-crank.

31. (withdrawn) The shield according to claim 27, further including a second shield body in the form of a tube and including a longitudinal slit, wherein the second shield body is concentrically positioned about the shield body with the longitudinal slit of the second shield body being located at a different circumferential position to the longitudinal slit of the shield body.

32. (withdrawn) The shield according to claim 20, wherein the shield body is composed a plurality of separate cooperating parts which together define the cavity, each of the cooperating parts including a core layer of cured liquid silicone resin loaded with particulate  $\gamma$  radiation-shielding material adapted to surround a radiation source located in the cavity, the core layer being located between two outer layers of solid polymeric material.
33. (withdrawn) The shield according to claim 32, wherein the cooperating parts include a first cylindrical body and a second cylindrical body
34. (withdrawn) The shield according to claim 32, comprising a pair of cooperating parts which fit together to provide a cavity for a pipeline T-junction.
35. (withdrawn) The shield according to claim 32, wherein the parts overlap when fitted together to enclose the cavity and to prevent shine.
36. (withdrawn) The shield according to claim 20, wherein the shield is in the form of a dome.
37. (withdrawn) The shield according to claim 20, wherein the shield is in the form of a box.
38. (withdrawn) A method of forming a tubular  $\gamma$ -rays shield, the method including the following steps:

applying a coating of curable liquid resin to a surface of a mandrel while rotating the mandrel about a horizontal axis and until a desired thickness is obtained and curing it to a self-supporting but tacky state to form an inside layer of the shield;

mounting the coated mandrel vertically in a cylindrical mould of larger diameter, with the axis of the mandrel coaxial with that of the mould;

pouring a curable mixture of silicone resin and particulate  $\gamma$ -ray radiation material into the annular gap between the coated mandrel and the cylindrical mould and curing the mixture to a self-supporting but tacky state to form a core layer of the shield;

removing the mandrel coated with the inside layer and core layer from the cylindrical mould, applying a coating of curable liquid resin to an exposed surface of the core layer while rotating the mandrel about a horizontal axis; completing the cure of the layers, and removing the cured shield from the mandrel.

## **EVIDENCE APPENDIX**

Not Applicable



## **RELATED PROCEEDINGS APPENDIX**

Not Applicable